

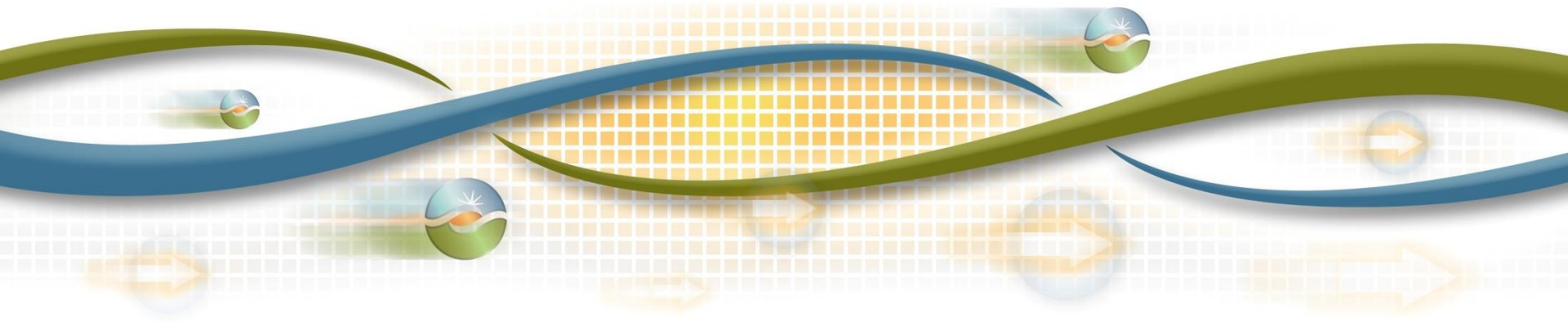
# 50% Special Study

## *Objective, Scope and Methodology*

*Performed as part of 2016-2017 Transmission Planning Process*

Sushant Barave

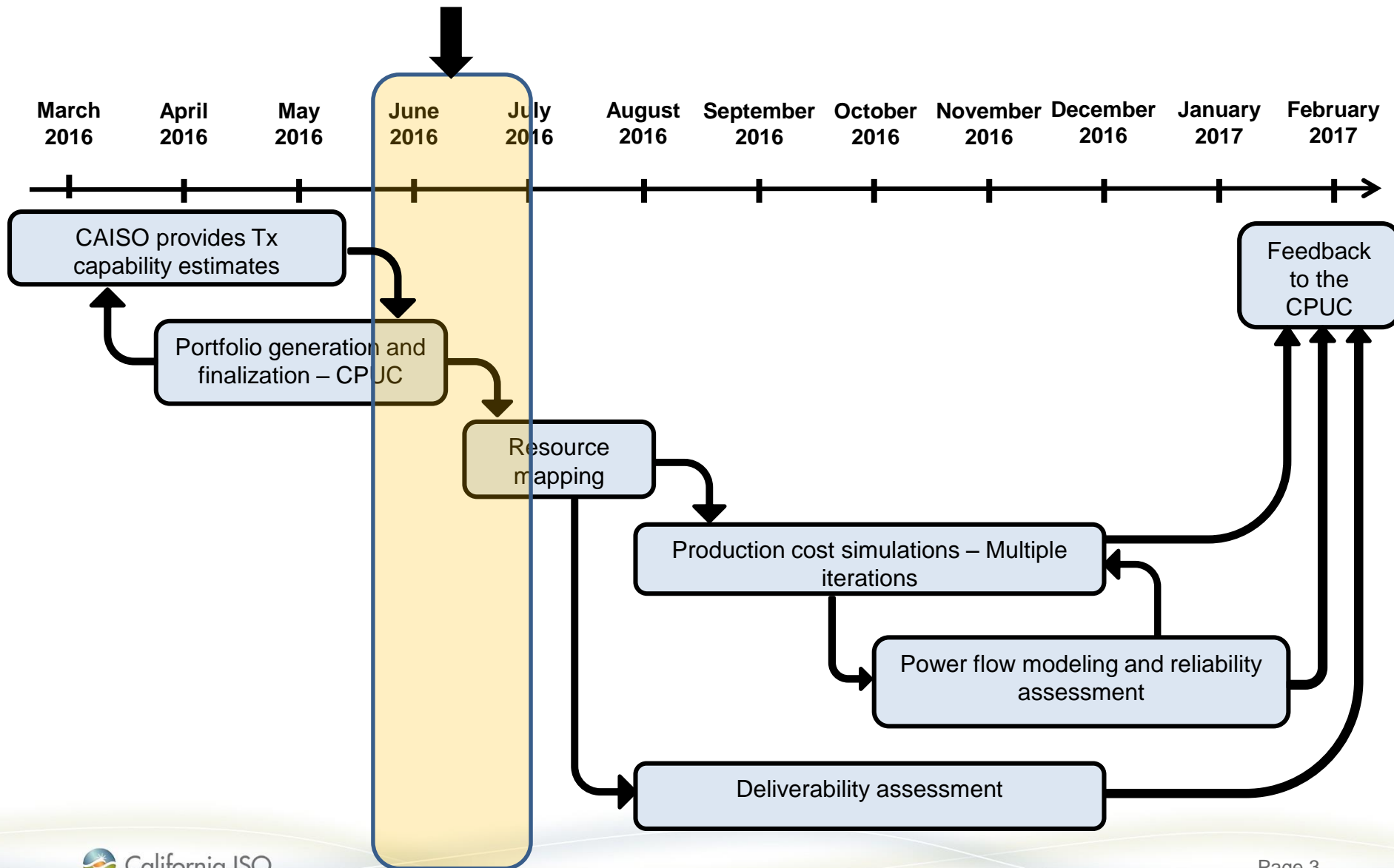
*June 20, 2016*



# Objective of the 50% special study

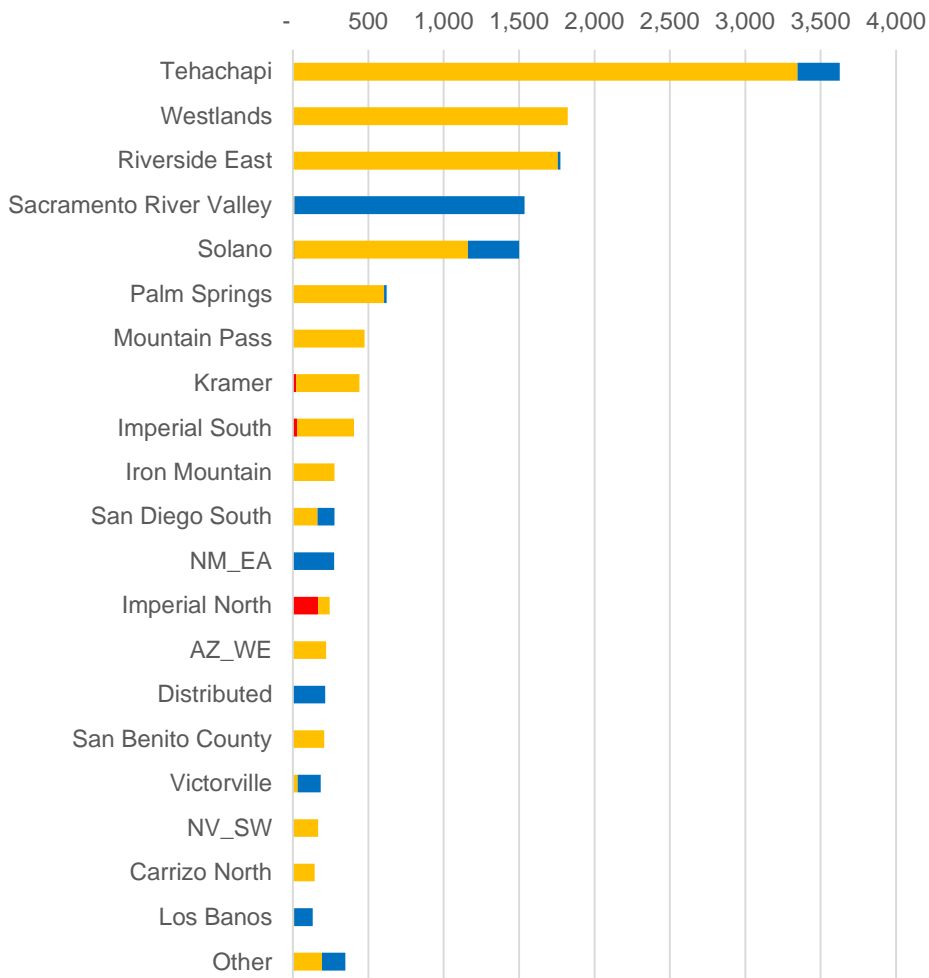
- ❑ Continue investigating the transmission impacts of moving beyond 33% assuming procurement based on
  - i. Deliverability Status – Energy Only (EO) or Full Capacity (FC)
  - ii. Resource location – In-state or Out-of-state
- ❑ Test the transmission capability estimates used in RPS calculator v6.2 and update these for the next release of RPS calculator
- ❑ Strictly an informational effort –
  - will not provide basis for procurement/build decisions in 2016-17 TPP cycle
  - Will be used to develop portfolios for consideration by CAISO in future TPP cycles
- ❑ Coordination with regional planning entities for the out-of-state portfolio modeling and assessment

# 50% Special study timeline (in 2015-2016 planning cycle)

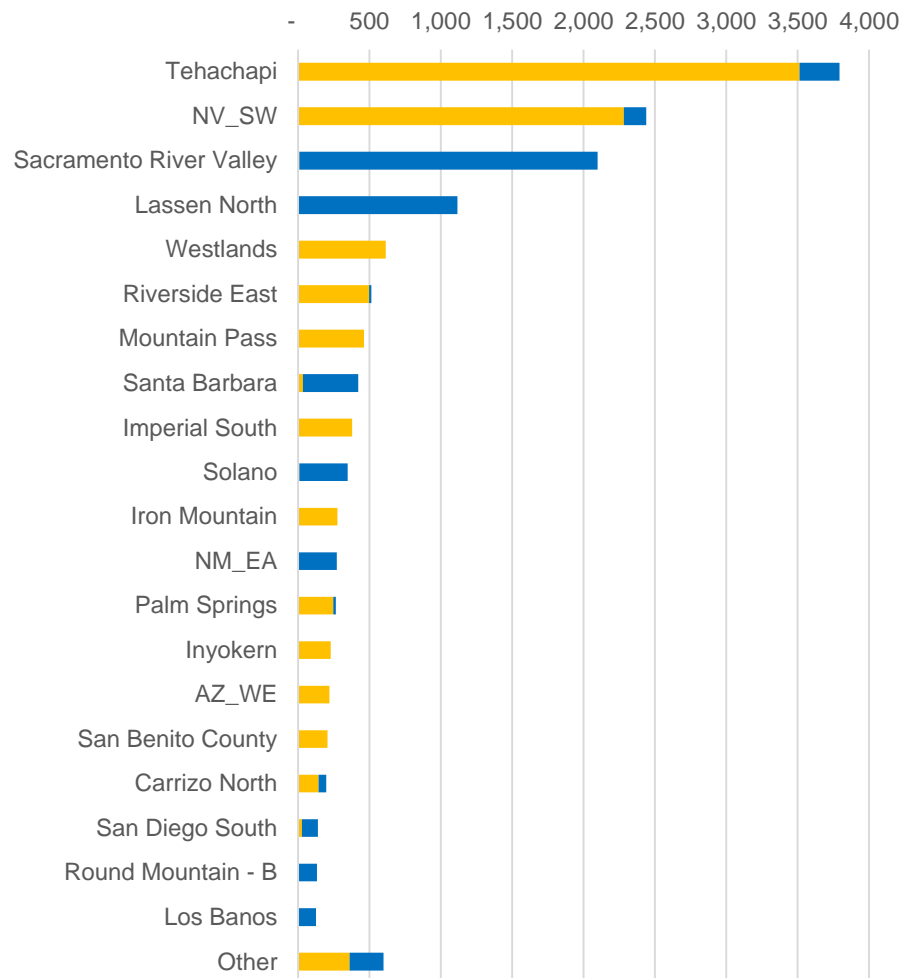


# A brief look at the portfolios – In-State

In-State FCDS (New MW Capacity)  
~14,877 MW



In-State EO (New MW Capacity)  
~14,848 MW

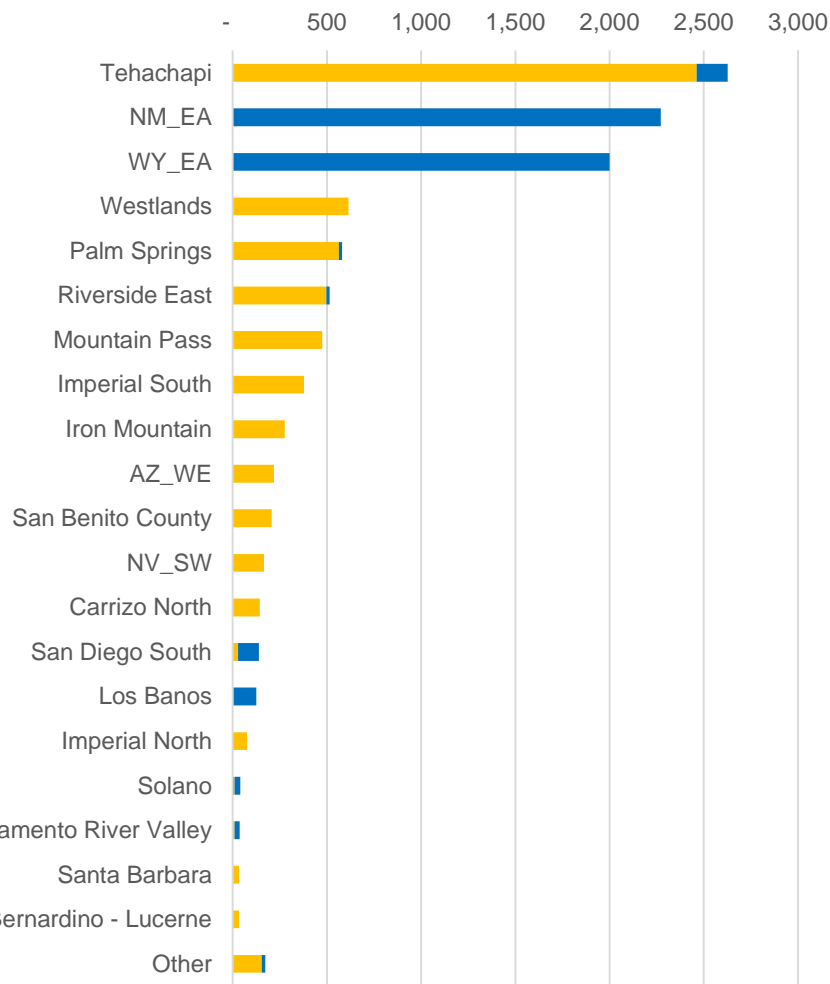


■ Biogas ■ Biomass ■ Geothermal ■ Hydro ■ Solar PV ■ Solar Thermal ■ Wind

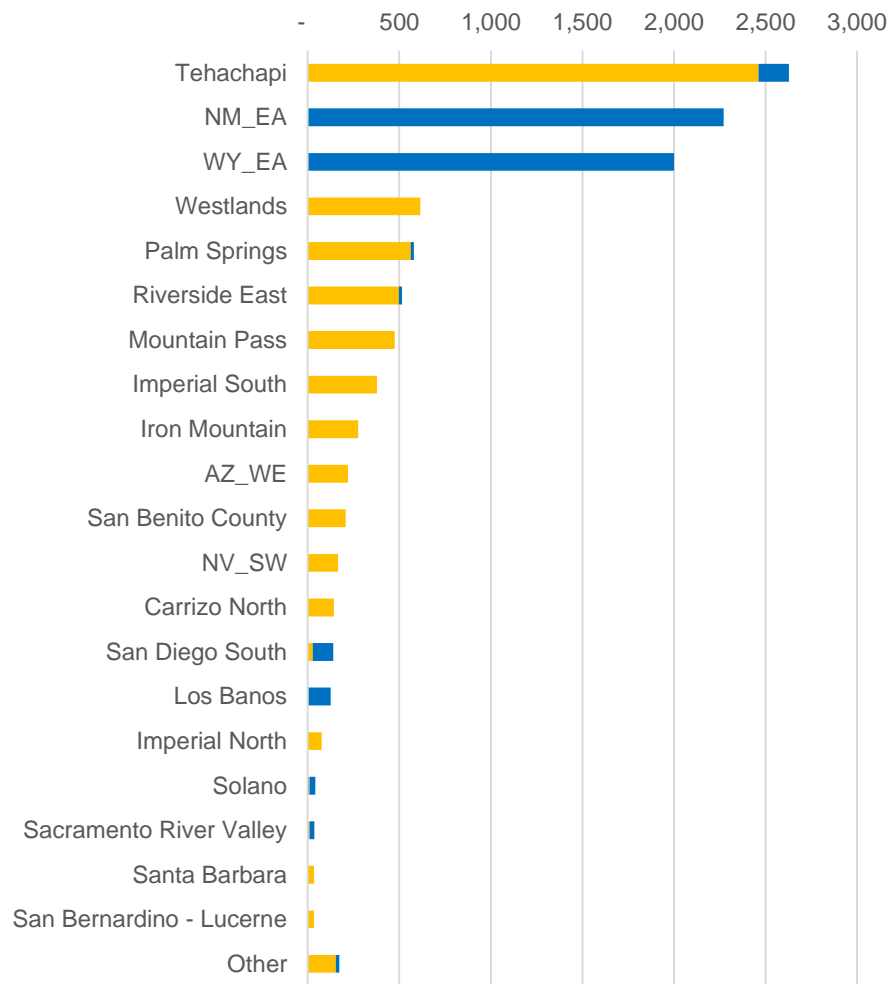
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# A brief look at the portfolios – Out-of-state

Out-of-State FCDS (New MW Capacity)  
~11,127 MW



Out-of-State EO (New MW Capacity)  
~11,127 MW



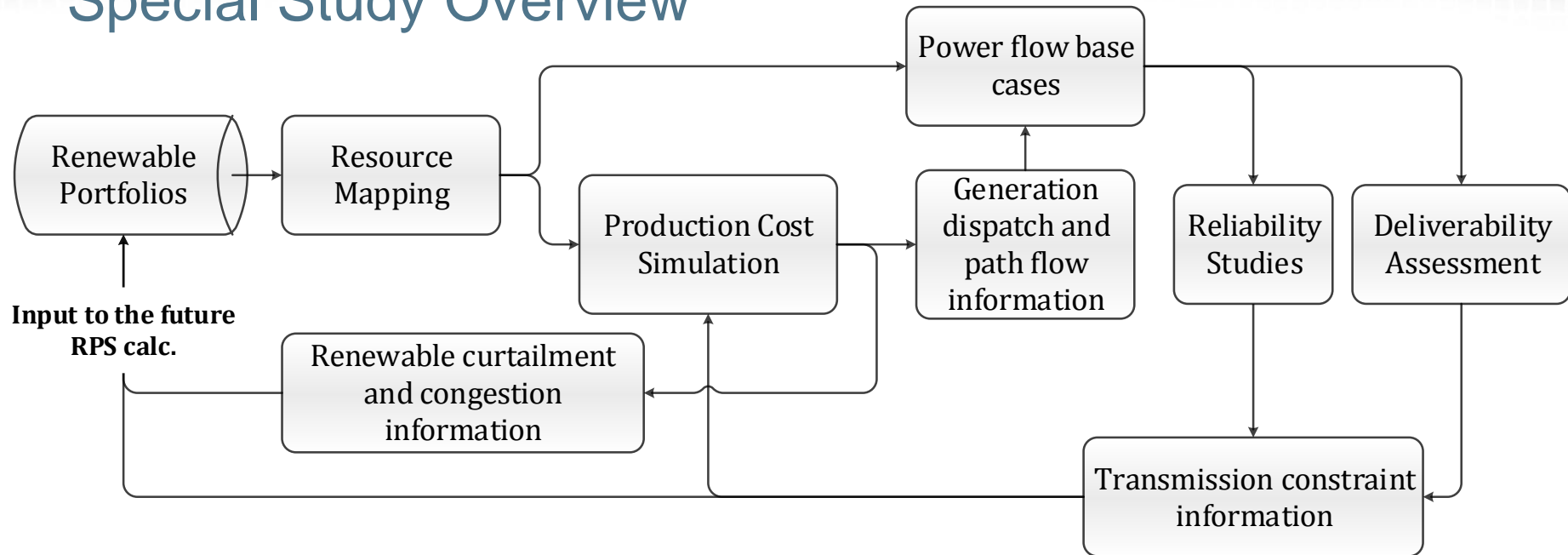
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# Study Scope and Sequence

- ☐ Four portfolios will be studied
  - i. In-state EO
  - ii. In-state FC
  - iii. Out-of-state EO
  - iv. Out-of-state FC
- ☐ Resource mapping for each portfolio
- ☐ Production cost simulations
- ☐ Identification of high transmission utilization snapshots from 8,760 Hrs data from production cost simulations
- ☐ Reliability studies (Power flow, post-transient, transient stability)
- ☐ Deliverability assessment

# Special Study Overview



- ☐ Resource mapping used the information from the existing ISO queue and geographical information provided by CPUC
- ☐ Deliverability assessment to be performed only for the FCDS portfolios
- ☐ Production cost simulation output is used to
  - Inform power flow cases (generation dispatch and major path flows)
  - Give information about renewable curtailment
- ☐ Reliability assessment will involve identification of constraints that
  - May limit considerable amount of generation
  - Would need expensive upgrades
- ☐ Such constraints will form the basis for the transmission inputs to the RPS calculator for future use

# Expected outcomes and next steps

## **Expected outcomes:**

- ☐ Impacts of FCDS resource build-up beyond 33% - main incremental effort over the previous study (In-state and Out-of-state futures)
- ☐ Identification of transmission limitations that would prohibit EO or FC interconnection of a large amount of resources in any renewable zones.
- ☐ Extent of renewable curtailment (overall vs. estimation of curtailment caused by transmission congestion)
- ☐ Refinement to the transmission capability estimates to be used for creating future renewable portfolios

## **Next Steps:**

- ☐ Resource mapping and modeling of portfolios
- ☐ Production cost modeling and simulation
- ☐ An update at the TPP Stakeholder Meeting #3 (November 2016)
- ☐ Feedback to the CPUC (February 2017)

# Questions?